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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,892	04/24/2000	SHIGETOSHI SEGAWA	MAT-7855US	1490

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EXAMINER

MAYES, MELVIN C

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 03/12/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

MF-9

Office Action Summary	Applicati n No.	Applicant(s)	
	09/445,892	SEGAWA ET AL.	
	Examiner	Art Unit	
	Melvin C. Mayes	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 112

(1)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(2)

Claims 1 and 3-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 claims “spraying **at least one** of ceramic powder and water together with compressed air” while Claim 9 claims “spraying **at least one** of water, ceramic powder, and a mixture of ceramic powder and water together with compressed air...” Both Claim 1 and Claim 9 now claim “wherein said ceramic powder is made from a material which is the same as the material used in said shrinkage suppression sheet.” Are the claims now limited to spraying ceramic powder, with or without water, together with compressed air, as suggested by the “wherein” phrase, or still inclusive of spraying with only water and compressed air, as suggested by the “at least one” phrase? The claims are now unclear as to their scope. For purposes of examination, the claims are still interpreted to include spraying with either (1) ceramic powder and compressed air, (2) water and compressed air, or (3) ceramic powder and water and compressed air, as claimed by the “at least one” phrase.

Claim Rejections - 35 USC § 102

(3)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(4)

Claims 1, 3, 5, 6, 9, 11 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by JP 10-218675 for the reasons as set forth in the First Office Action.

JP 10-218675 discloses a method of manufacturing a multilayer substrate comprising: providing a shrinkage restraint greensheet on each side of a green sheet laminate; firing the laminate; and removing the ceramic powder residue of the restraint green sheets from both sides of the substrate by dry type blast of projection material in a hyperbaric-pressure airstream. When the restraint greensheets are made of MgO, the projection material in the blast is fine particles of MgO, for example 10 micrometers particle size (translation pg. 2-3, specifically paragraphs 0017-0018).

Applicant cannot rely upon the certified English translation of the foreign priority document to overcome this rejection because the foreign priority document does not provide support for the claims. The foreign priority document, as evidenced by the translation, only provides support for removing the shrinkage suppression sheets by blowing (spraying) compressed air together with mixture of ceramic powder and water. The present claims claim spraying with (1) ceramic powder and compressed air, (2) water and compressed air, or (3) ceramic powder and water and compressed air, as claimed by “spraying at least one of ceramic powder and water together with compressed air. The foreign priority document does not provide support for spraying with only ceramic powder and compressed air or with only water and

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compressed air, and thus the claims are not entitled to the foreign priority date to overcome the JP 10-218675 reference, which discloses spraying with ceramic powder and compressed air.

(3)

Claims 1, 3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hakotani et al. 5,370,759.

Hakotani et al. disclose a method for producing a multilayered ceramic substrate comprising: laminating an inorganic sheet on each side of a green sheet laminate, the inorganic sheet of a material which does not sinter at the firing temperature of the green sheet laminate and used to prevent shrinkage of the laminate; firing the laminate; and removing the unsintered inorganic material by conventional method such as water-jetting (col. 7, lines 59-62).

Claim Rejections - 35 USC § 103

(4)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(5)

Claims 4, 7, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-218675 for the reasons as set forth in the First Office Action.

Providing the air used to perform dry type blasting at a pressure in the range of 3 to 5.55 kgf/cm², as claimed in Claims 4 and 10, would have been obvious to one of ordinary skill in the art to provide sufficient force of the dry blast to perform removal of the ceramic powder residue.

Performing dry blasting on both sides of the fired substrate simultaneously, as claimed in Claim 7, would have been obvious to one of ordinary skill in the art.

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Collecting the projection material after using to the remove the ceramic powder residue, as claimed in Claim 8, would have been obvious to one of ordinary skill in the art to conserve projection material for use to remove ceramic powder residue from other fired substrates.

(6)

Claims 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakotani et al. 5,370,759 for the reasons as set forth in the First Office Action.

Providing the air used to perform water-jetting at a pressure in the range of 3 to 5.55 kgf/cm², as claimed in Claims 4 and 10, would have been obvious to one of ordinary skill in the art to provide sufficient force of the water jet to perform removal of the unsintered inorganic material.

Performing water jetting on both sides of the fired substrate simultaneously, as claimed in Claim 7, would have been obvious to one of ordinary skill in the art.

(7)

Claims 1 and 3-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakotani et al. 5,370,759 in view of Yam et al. and Kim et al.

Hakotani et al. disclose a method for producing a multilayered ceramic substrate comprising: laminating an inorganic sheet on each side of a green sheet laminate, the inorganic sheet of alumina, which does not sinter at the firing temperature of the green sheet laminate, and used to prevent shrinkage of the laminate; firing the laminate; and removing the unsintered alumina by conventional method such as sand blast (col. 6, lines 5-10, col. 7, lines 59-62). Hakotani et al. does not disclose removing the unsintered alumina using a blast of alumina.

Yam et al. teach that dry blasting to remove adherent materials involves directing abrasive particles to the surface by means of pressurized air at 20-110 psi while wet blasting is directing abrasive media to a surface using pressurized water or both air and water. Yam et al. teach that the abrasive media can be glass beads, alumina or sand and teaches that the abrasive

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particles can be collected and reused for additional blast cleaning (col. 1, lines 23-34, col. 4, lines 1-4, col. 5, lines 20-22).

Kim et al. teach that alumina can be grit blasted using alumina as the abrasive and at a pressure of 50 psi (3.5 kg/cm^2). Kim et al. further teach using coarse abrasive particles of 60 to 70 microns in diameter and finer grit of for example 12 to 20 microns in diameter (col. 4, lines 15-45, col. 6, lines 5-10).

It would have been obvious to one of ordinary skill in the art to have modified the method of Hakotani et al. for producing a multilayered ceramic substrate by providing alumina as the abrasive media for dry blasting to remove the unsintered inorganic material as Yam et al. teach that abrasive media for removing adherent materials can be alumina and Kim et al. teach that it is known to use alumina to grit blast an alumina. The use of alumina abrasive particles to remove unsintered alumina from the substrate would have been obvious to one of ordinary skill in the art.

Providing the alumina for dry blasting of a particle size of less than 10 microns or in the range of 0.1 to 150 microns, as claimed in Claims 5, 6, 11 and 12, would have been obvious to one of ordinary skill in the art as Kim et al. teach that coarse particles of diameter of 60 to 60 microns as well as finer grit can be used for grit blasting.

Dry blasting or water jetting at an air pressure in the range of 3 to 5.5 kg/cm^2 , as claimed in Claims 4 and 10, would have been obvious to one of ordinary skill in the art as Yam et al. teach that dry blasting to remove adherent materials involves directing abrasive particles to the surface by means of pressurized air at 20-110 psi and Kim et al. teach that alumina can be grit blasted at a pressure of 50 psi (3.5 kg/cm^2). The particular pressure used for dry blasting or water

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jetting would have been obvious to one of ordinary skill in the art to achieve removal of the unsintered inorganic material and could have been arrived at without undue experimentation.

It would have been obvious to one of ordinary skill in the art to have collected the abrasive media after dry blasting or water jetting as taught by Yam et al. for reuse for additional blast cleaning.

Response to Arguments

(8)

Applicant's arguments filed October 26, 2001 have been fully considered but they are not persuasive. Applicant argues that JP 10-218675 is not prior art as to the subject application. Applicant argues that Claims 1 and 9 are patentably distinguished from the Hakotani patent on the basis of the requirement that the ceramic powder is made from a material which is the same as the material used in the shrinkage suppression sheet. Applicant argues that Yam is directed to slurry blasting using a water-soluble particulate and for removing adherent material such as paint, scale, dirt, grease and the like from solid surfaces and does not provide the motivation needed to support and obviousness rejection. Applicant argues that Kim does not suggest using any of its disclosure with Hakotani.

(9)

As set forth, JP 10-218675 is valid prior art against the claims of the present application because the claims are not entitled to the date of the foreign priority document. The present claims claim spraying ceramic powder and air, or water and air, or a mixture of ceramic powder and water together with air, while the foreign priority document, as evidenced by the certified

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English translation, only discloses using a mixture of ceramic powder and water together with compressed air. The claims in their entirety do not have support in the foreign priority document.

Hakotani discloses using sand blast or water jetting. Because claims 1 and 9 are still inclusive of spraying water together with compressed air, the Hakotani reference is still applicable under 35 USC 102(b) to reject the claims because the references discloses using water jetting.

With respect to the claimed embodiment of spraying ceramic powder together with compressed air, Hakotani discloses using sand blast to remove alumina. Yam et al. and Kim et al. are pertinent to using alumina as a media for abrasive blasting. Yam et al. do suggest slurry blasting using a water-soluble particulate, however, this is when cleaning of a surface is to be performed with abrasive media having a Mohs hardness of less than 5.0. Glass beads, alumina and sand, however, have a Mohs hardness greater than 5.0 (col. 4, lines 1-4).

The Examiner's position is that the background teachings of Yam et al. are not limited to removing adherent material such as paint, scale, dirt, grease and the like from solid surfaces but is pertinent to abrasive blasting in general to clean a surface regardless of the particular material to be removed. Because the teachings of Yam et al. are generally directed to cleaning by abrasive blasting, the Examiner's position is that one of ordinary skill in the art would have been directed or motivated by the teachings to use air at the pressures as suggested by the reference for abrasive cleaning and to collect the abrasive particles as suggested by the reference for reuse.

With respect to the Kim et al. reference, it is pertinent because it teaches that alumina can be grit blasted using alumina as the abrasive and at a pressure of 50 psi (3.5 kg/cm²) and teaches the size of abrasive particles that can be used for abrasive blasting. The Examiner's position is

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that the reference, regardless of its particular reason for abrasive blasting, would have suggested to one of ordinary skill in the art that alumina particles can be used to abrasive blast alumina in the method of Hakotani et al. and further would have suggested to one of ordinary skill in the art the size of particles that can be used for abrasive blasting. The use of alumina for abrasive blasting is further reinforced by the teaching of Yam et al. which teaches that glass beads, alumina or sand can be used for abrasive blasting for cleaning.

Conclusion

(10)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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(11)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin C. Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Melvin C. Mayes
Primary Examiner
Art Unit 1734

MCM
March 10, 2002